UNIVERSITÄT PASSAU

Wirtschaftswissenschaftliche Fakultät

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Diskussionsbeitrag Nr. V-64-12

Volkswirtschaftliche Reihe ISSN 1435-3520

PASSAUER DISKUSSIONSPAPIERE

Herausgeber:
Die Gruppe der volkswirtschaftlichen Professoren
der Wirtschaftswissenschaftlichen Fakultät
der Universität Passau
94030 Passau

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On the Costs of Kindness – An Experimental Investigation of Guilty Minds and Negative Reciprocity*

Manuel Schubert Johann Graf Lambsdorff✉

January 5, 2012

Abstract

Psychology has inspired economics to recognize intentions in addition to outcomes as being relevant for utility and behavior. Reciprocal behavior, in particular, has been related to the kindness of chosen actions and how kindness can be derived from the benefits obtained in unchosen alternatives. This study shows that a richer understanding of kindness is required. We carry out ultimatum games with a reduced space of strategies and observe that subjects refrain from negative reciprocity (rejecting proposals) if an unchosen alternative was costly to the proposer. Second, we find proposers to anticipate this behavior. Not only the benefits are relevant for assessments of kindness, the costs of kindness matter as well.

Keywords: Intentions; reciprocity; fairness

JEL-classification: C70, C91, D63

PsycINFO classification: 2360

* We thank seminar participants at Passau University, Germany, February 2011.

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1. Introduction

Imagine yourself swimming in a lake and accidently entangling your foot in loose rope. You are close to drowning as a car drives by. You wave with your arms, yell loud to attract the driver's attention. But while he seems to take notice he continues driving, disregarding your peril. You are lucky to disentangle your foot and survive the hazard. Driving to the next town with your car, the only thing that continues to trouble you is how unkind the driver of this car was. As you stop to refuel you are stunned to see this car parking in front of you. You run up to the driver and feel your blood pressure climb as you prepare to tell him a lesson.

This is a story of negative reciprocity. And it may provide us with some clues of how we judge other's unkind actions. One key component that affects our judgment relates to the material consequences of an action. As noted by Falk et al. (2008), economic theory tends to apply a consequentialist practice where the utility of an action is judged solely in terms of the material consequences. Having survived the danger, there are no material consequences and thus standard economic theory provides us with little guidance for our willingness to start a dispute with the car driver. As can easily be imagined, this is a failure of theory rather than of our sentiments.

Criminal judges are not only concerned with the *actus reus*, the objective evidence, but also the *mens rea*, the mental part of a crime. It makes a difference whether a perpetrator acted purposefully and knowingly. We are no different to a criminal judge in evaluating others. We also explore the *mens rea* that has led the car driver to act the way he did. We want to understand the cognitive process that accompanied his behavior. We attach strong sentiments to the process of how an outcome came about, beyond the fact that we finally survived.

To understand our concern, imagine a variation to the above story. The car driver's kid was lying in the back of his car, urgently in need of medical treatment. When he passed the lake he had to decide whose support was more important to him. Judging the situation now, we would be willing to forgive him. We observe that stopping and helping us had been highly disadvantageous to the car driver and understand his behavior. His failure to be kind was not driven by reckless self-regard. His "costs" of acting kindly would have been high. We would not regard the car driver's action as being driven by bad intentions and abstain from blaming him. This study brings the relevance of these costs of kindness to the laboratory.

Section 2 of this paper reviews the current evidence on kindness as a driver of reciprocal behavior. In section 3 we present our experimental design and derive our hypotheses. In section 4 we describe the experimental procedures. The results are illustrated and discussed in sections 5 and 6. The study ends with concluding remarks in section 7.

2. Previous evidence on kindness evaluations

Economists have taken inspiration from psychology. A first approach was to recognize that we do not care only about ourselves. Not only own payoffs are relevant to utility and behavior. We may be averse to inequality, envy others or feel guilty when taking too much for ourselves (Fehr and Schmidt 1999). Some subjects may even be altruists while others are misanthropists (Levine 1998). We may view behavior as resulting from individual characteristics, to vices and virtues. We may recognize the concern for others in an individual's utility function. At the downside, such an approach does not explain why we may behave altruistically in some circumstances and take revenge in others.

In this spirit Rabin (1993) argues that neither is altruism only the result of virtue, nor is misanthropism a behavior that can reliably be related to a bad character. Rather, people who are altruistic to other altruistic people are also motivated to hurt those who hurt them. The behavior chosen depends on the kindness or unkindness perceived among others. We adjust our behavior in response to how we are treated by others and reciprocate accordingly. This has led to various attempts at measuring kindness and unkindness. What would these terms mean with respect to the above example? Why precisely do we sense the car driver to have acted unkindly and deserves to be yelled at?

The literature addressing the judgment of kindness linked the perception of actual behavior to the consequences that would have resulted from unchosen alternatives (e.g. Brandts and Solà 2001, Falk et al. 2003, Bolton and Ockenfels 2005, Sutter 2007).[1] Assume, for example, a mini ultimatum game in which two players bargain about a given stake size of 100 Taler. One player, the proposer, either offers an 80:20 split or proposes an alternative offer which differs across treatments. The second player, the responder, accepts or rejects the proposed offer. If she accepts, payoffs are disbursed according to the proposed split. If she rejects, both players receive zero payoffs. Brandts and Solà (2001) and Falk et al. (2003) hypothesize that the unchosen alternative may serve as a reference to assess how unkind the actual offer is meant to be. Following folk interpretations of kindness, offering 80:20 is unkind if the alternative proposal is the equal split (50:50). However, if the unchosen alternative allocates the full stake to the proposer (100:0), offering 80:20 is the best the proposer could do. Shall he be punished for behaving kindly? The answer seems to be a resounding no. Brandts and Solà (2001) find about 13 percent of the responders to reject the 80:20 offer when the alternative proposal yields a 50:50 split. On the other hand, only 3 percent reject the kind 80:20 offer given an alternative proposal of 85:15. Later studies provide further evidence. Falk et al.

[1] Another line of research investigates how the expected consequences of an action affect our judgment of kindness (see e.g. Schubert 2011 for a recent overview).

(2003) observe that 44 percent reject the 80:20 offer when the alternative offer is the 50:50 split, but less than 10 percent reject the kind 80:20 offer given an unchosen alternative of 100:0.

These findings suggest that unchosen alternatives may strongly influence our judgment of kindness. They have thus found their way into formal models that add our concern for reciprocity into an individual's utility function. Such models require a reference, a benchmark that depicts a neutral type of behavior that is neither kind nor unkind. Most of these models employ the unchosen alternatives to determine an intrapersonal reference for neutral behavior (e.g. Rabin 1993, Dufwenberg and Kirchsteiger 2004, Cox et al. 2007, Seebald 2010).[2] A proposer could be judged as unkind by a responder, for example, if his unchosen alternative would have provided the responder with a higher payoff. On the other hand, the proposer is seen to be kind if he offers more than in the unchosen alternative. Thus, the better the unchosen alternative to the responder, the less kind is the actual 80:20 offer. Falk and Fischbacher (2006)'s notion of kindness differs from these approaches in two ways. First, they argue that kindness includes an interpersonal, not only an intrapersonal comparison. For instance, a proposer offering an 80:20 split is unkind because he wants to get 60 currency units more than the responder. This unkindness does not result from unchosen alternatives but from an interpersonal comparison of payoffs. Second, they assume a responder to infer from the proposer's unchosen alternative how much he favors the actual proposal. If the proposer could have opted for an equitable alternative he is *intentionally* unkind and for this reason particularly blameworthy. But if there was no such alternative available, the proposer is less to blame for his unkind proposal. Falk et al. (2003), Bolton and Ockenfels (2005) and Sutter (2007) provide some experimental support for this idea. The former authors observe that rejection rates to 80:20 offers decrease from the mentioned 44 percent to 27 percent when the unchosen offer yields a 20:80 payoff rather than the 50:50 split. The 20:80 split would be harmful to the proposer so that he can little be blamed for having disregarded it. In contrast, Rabin's kindness predicts rejection rates to be higher when the alternative proposal yields a 20:80 split.

Our approach adds to the literature on this front. We acknowledge that the benefits of kindness, the extent to which other's behavior increases one's own payoff and serves to support equality, are important for understanding reciprocity. But we claim that also the costs of kindness are relevant. Brandts and Solà (2001: 152 FN 16) already conjectured that the costs of kindness may influence responder behavior. However, their experimental design employs regular mini ultimatum games that vary costs and benefits simultaneously. Thus, they are not

[2] We included the model of Cox et al. (2007) because it formally refers to an intrapersonal reference. However, these references are estimated from experimental data so they could reflect other than intrapersonal factors.

able to distinguish the impact of costs from those of benefits. We believe that Falk and Fischbacher (2006) have come closer to isolating the costs of kindness. Yet, their model is less intuitive and does not explicitly claim to be linked to the costs of kindness.

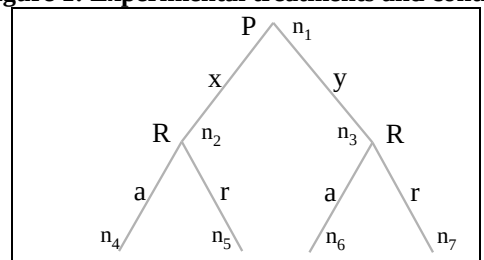
In the standard ultimatum game subjects are confronted with costs and benefits identical in absolute size. One's gains (the respondent's benefits of kindness) are the other's losses (the proposer's costs of kindness) and vice versa. But how would we assess kindness if only costs or benefits change? Gut instincts provide us with little guidance for these situations. Would costs be considered? And if so, do proposers and responders coordinate on a mutual language of kindness or do they stick to a rather self-serving interpretation? Do proposers value their costs higher than the other's benefits and would respondents value foregone benefits higher than the proposer's costs?

In this study, we strive for an empirical answer to these questions. We report results from three treatments of a mini ultimatum game with flexible costs but constant benefits of kindness. In order to quantitatively asses the impact of costs versus benefits of kindness we run a fourth ultimatum game where also the benefits of kindness vary. We run logit regressions with this broader sample and the costs and benefits of kindness being valued largely equal among responders. We also observe that costs are about as important as benefits to proposers. Thus, despite the fact that proposers are materially affected by the costs of kindness, they seem to coordinate on a mutual language for the judgment on kindness.

3. Experimental Design

Our experimental design builds on three treatments of the mini ultimatum game plus one control game (see figure 1). In each treatment, the first mover, denoted as P(roposer), can decide between offering an 80:20 split (x) or an alternative split (y). The alternative proposal (y) varies across treatments and depends on the costs, c, related to kind behavior. The costs, c, are either 50 (treatment 1), 30 (treatment 2), or 10 (treatment 3). In contrast, the benefits of kindness, b, remain constant across all treatments. In treatment 1, proposing (y) implies offering a 30:50 split. In treatment 2, (y) is the 50:50 equal split, while in the third treatment, (y) yields a 70:50 split. The values on costs and benefits are reported here to ease comparisons, but they were not reported to participants who observed only payoffs. As is known for ultimatum games, once P has selected a proposal, R can a(ccept) or r(eject) the proposal. If she accepts, payoffs are disbursed according to P's split. If R rejects, each player receives a zero payoff.

Figure 1: Experimental treatments and control



π_P	80	0	80-c	0
π_R	20	0	20+b	0

treatment	costs c	benefits b
1	50	30
2	30	30
3	10	30
control	10	10

π_P: P's payoff, π_R: R's payoff

Imagine P proposes the 80:20 split to R. Being at node n_2, R has then to make up her mind about whether to accept or reject P's proposal. She can either agree on the asymmetric split favoring P or pay 20 currency units to destroy P's endowment of 80. If we assume R to have a preference for reciprocity, she must now start assessing the kindness of P's proposal. If the actual proposal is only slightly unkind, she may abstain from retaliation and accept the proposed split. On the other hand, if unkindness exceeds a certain threshold value, R will gain higher utility from retaliation than from cooperation. Starting to judge P's kindness R may now ask "could the proposer have done better"? This shifts her focus to the proposal P has not chosen. She may notice that the unchosen proposal differs from the actual 80:20 offer in two ways.

In the first treatment, for example, R may perceive P's proposal as intrapersonally unkind. She could have got 50 instead of 20 currency units. The difference of 30 units are the benefits of kindness, b. These are R's unrealized gains associated with (unchosen) kind behavior. At the same time, she may notice on the interpersonal level that P's costs of kindness amount to 50 currency units thus exceeding the potential benefits of kindness. In the next treatment, the costs of kindness drop to 30. This would allow P to equalize payoffs and pay a price identical to R's gain. The alternative becomes more reasonable and abstaining from it provides more of an impression that P selected the asymmetric 80:20 split on purpose and with a disregard towards equality. The highest level of unkindness may be assigned in the third treatment. Like in our introductory story, kindness is now cheaply available to P. If he refuses to be kind, he signals that he values 10 units more for himself as more important than 30 extra units for R. The *mens rea* of his action appear particularly malevolent.

Therefore, the relevance of the costs of kindness can be obtained by comparing results across treatments. We should find that

H1: REJECTION RATES DECREASE IN THE COSTS OF KINDNESS

If proposers believe responders to base their behavior on this hypothesis and value their kindness against material losses, we should analogously find that the

H2: FREQUENCY OF 80:20 OFFERS INCREASE IN THE COSTS OF KINDNESS

We address the benefits of kindness by including data from another mini ultimatum game in our analysis. This control game is played with a constant stake size in proposals and also allows for an 80:20 offer in (x). The control game is similar to our third treatment. The alternative move (y) proposes a 70:30 split to R. The costs of choosing the kind alternative (y) thus equal 10 currency units in both treatment 3 and the control game (see figure 1). However, the games differ with respect to R's payoffs at end node n_6. While R's benefits of kindness amount to 30 units in treatment 3, they equal the costs of kindness of 10 in the control game.

We add this control treatment for two reasons. First, we want to obtain a richer set of data, allowing us to run multivariate analysis where both, costs and benefits of kindness, enter the calculus simultaneously. Second, we are interested in determining the magnitude of costs and benefits relative to each other. Are benefits more relevant than costs and do our results vary for proposers and for responders?

4. Experimental procedures

In order to test our hypotheses the games were embedded in a series of laboratory experiments at the University of Passau in December 2010.[3] Each subject played only one treatment (between subject design). The control game was played subsequently by a random selection of 40 subjects (within subject design). In addition, we did not provide feedback until the very end of the experiment.

Subjects were recruited by standard methods such as email invitations, advertising in bulletins, blogs, lectures and so forth. Upon arrival participants were instructed on dos and donts, the expected duration of the experiment, payment and blindness procedures. Participants then were randomly split into two groups and guided to separated laboratories. The sessions were organized computer-based and with neutral framing. Treatments were programmed and conducted with the software z-Tree (Fischbacher 2007). Responders were always asked to state

[3] Our treatments were preceded by a random-role dictator game.

complete strategies compassing responses for each decision node (strategy method). In order to ensure full single-blindness, players only interacted with counterparts from the other computer lab.

Each subject received a show-up fee of 2 Euros. During the experiment all payoffs were specified in an experimental currency unit, Talers. The exchange rate was 1 Taler = 2 Eurocent. At the very end of a session, payoffs were summed up across all games and displayed as a whole in order to ensure that experimenters could not infer actual play.

5. Descriptive analysis

In total, we collected data from ten sessions with 264 subjects. The average student was 22 years old with a minimum (maximum) age of 19 (35). The mean semester was 4.2. 35 percent (91 subjects) were male. This proportion is broadly in line with current gender representation at advanced undergraduate levels at the University of Passau. Each session lasted around 23 minutes. Net lab time amounted to 13 minutes. Average payoffs were 5.13 Euros for that time. The minimum payoff was 2 Euros, the maximum 8.40 Euros. For comparison, a student assistant at the University of Passau earns 7 Euros per hour.

Table 1 provides summary statistics for responder and proposer behavior across all treatments and the control game. For each game it reports the costs and the benefits associated with kind behavior, the number of observations for each role, and descriptive statistics on responder and proposer behavior. We also include the odds which allows are more intuitive interpretation of behavior in subsequent logit regressions. The odds is the probability of rejection, p, divided by the probability of accepting, $(1-p)$. For example, in the third treatment 19 percent of the responders reject the 80:20 offer. This means that rejection is approximately a quarter (0.19/0.81=0.23) as likely as acceptance in this treatment.

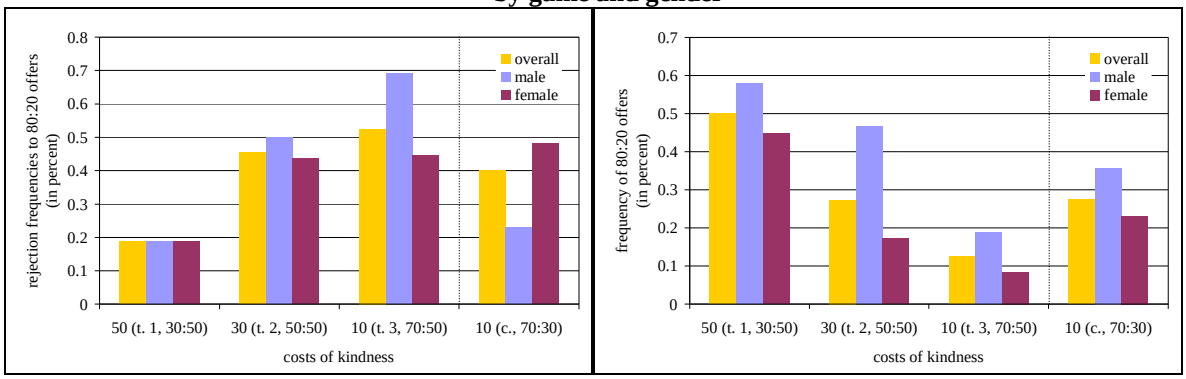
Table 1: summary statistics

game	costs of kindness	benefits of kindness	number of observations (for each role)	responder behavior		proposer behavior	
				rejection of 80: 20 (in percent)	odds $[p/(1-p)]$	offer of 80:20 (in percent)	odds $[p/(1-p)]$
treatment 1	50	30	48	.19	.23	.50	1.00
treatment 2	30	30	44	.46	.85	.27	.37
treatment 3	10	30	40	.53	1.13	.13	.15
control	10	10	40	.40	.67	.28	.39

Figures 2a and 2b illustrate responder and proposer behavior across our three treatments and the control game graphically. Overall behavior seems to be broadly in line with our hypotheses. In figure 2a, rejection rates steadily increase across the three treatments. The higher the

costs associated with the kind alternative the lower the probability to reject the actual 80:20 offer.

Figures 2a-b: (a) responder and (b) proposer behavior by game and gender



The nonparametric Kruskal-Wallis-test determines the probability for the treatments to result from a joint distribution and indicates significant differences in mean rejection rates across treatments (see table 2). Results from pairwise comparisons show that responder behavior in treatment 1 is significantly different from the other two treatments, whereas rejection rates in treatments 2 and 3 are not significantly different from each other (see table 2).

Table 2: test statistics for responder and proposer behavior

	responder behavior					proposer behavior				
	Kruskal-Wallis equality of populations rank test		p-values for Mann-Whitney pairwise comparisons			Kruskal-Wallis equality of populations rank test		p-values for Mann-Whitney pairwise comparisons		
	costs of kindness	rank sum	treatment 1	treatment 2	treatment 3	costs of kindness	rank sum	treatment 1	treatment 2	treatment 3
treatment 1	50	2586	-			50	3792	-		
treatment 2	30	3146	.006	-		30	2816	.027	-	
treatment 3	10	3046	.001	.521	-	10	2170	.000	.094	-
	chi²	8.527				chi²	9.417			
	p	.014				p	.009			
	chi² with ties	12.079				chi² with ties	14.659			
	p	.002				p	.001			

Some studies find support that responder behavior interacts with a subject's gender (e.g. Cox 2002, Lambsdorff and Frank 2011, Schubert 2011). Women may have a greater sense for equality, whereas men may be motivated by reciprocity. Our responder data may corroborate these earlier results. Rejection rates of female responders increase across treatments, but less than those of men (see figure 2a). Women might be less concerned about the costs of kind-

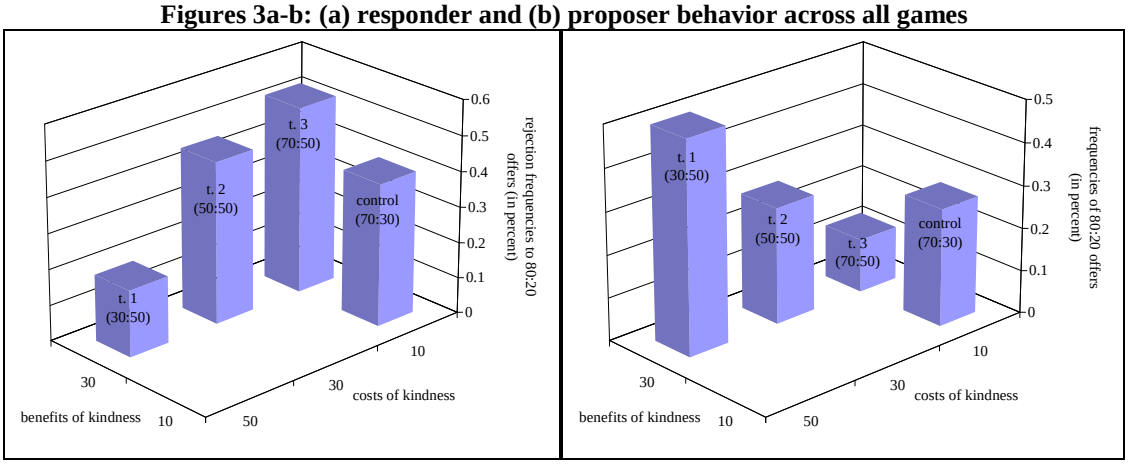
ness, which may be in line with their overall less pronounced concern for reciprocity. We will address this issue more specifically in our logit regressions.

Proposers seem to anticipate the cost-sensitivity among responders (see figure 2b). They appear to play unkindly toward the responder the higher the price for kindness. The Kruskal-Wallis-test confirms this conjecture. Offer frequencies significantly differ across treatments (see table 2). Again, pairwise comparisons indicate that proposer behavior in treatment 1 is significantly different from the other two treatments. We also find weakly significant differences in offer frequencies in treatments 2 and 3.

Across all treatments we observe male proposers to offer the unequal 80:20 split more often than female proposers. In line with the above-mentioned findings on gender differences in reciprocal preferences, it seems plausible that female proposers abstain from proposing 80:20 because they may have a stronger preference for equality than for reciprocity. We will shed more light on this aspect in the logit regressions.

Overall, we find evidence in favor of the hypotheses H1 and H2. Let us now discuss behavior in the control game. Given an alternative offer of 70:30, 48 percent of all female and 23 percent of all male responders reject the 80:20 offer resulting in an overall rejection frequency of 40 percent (see figure 2a). Female proposers offer the 80:20 split in about 23 percent of all observations in the control game. Male proposers are observed to offer the 80:20 split in 36 percent of all cases. The aggregate frequency amounts to 28 percent (see figure 2b). Figures 3a and 3b reorganize overall rejection rates to 80:20 offers and frequencies of 80:20 offers in our games sorted by costs and benefits. What can be learnt about the costs and the benefits of kindness?

Figures 3a-b: (a) responder and (b) proposer behavior across all games



First let us compare responder behavior in treatment 3 and the control game (figure 3a). According to hypothesis H1, offering 80:20 is equally unkind in both treatments because both unchosen alternatives would incur costs of 10 to the proposer. Figure 3a depicts that rejection

rates decrease from 53 percent in treatment 3 to 40 percent in the control game. The drop in rejection rates comes along with a decrease of 20 in the benefits of kindness. Although this effect is not significant at conventional levels (z=-1.114, p=.2652, Mann-Whitney), it points out that benefits of kindness do play a role. It is not the costs of kindness that can alone be held responsible for observed variations.

Moreover, we observe that offer frequencies also vary with the benefits of kindness (figure 3b). The average proposer offers the 80:20 split in only 13 percent of all observations in treatment 3. In contrast, almost one third of all proposers in the control game choose the 80:20 offer. This difference is slightly significant (z=1.667, p=.0956, Mann-Whitney) and indicates that proposers assume their counterparts to respond differently when the foregone benefits change across games. In line with Rabin-like reciprocal preferences, subjects may actually consider the foregone benefits associated with an unchosen alternative.

But what is more important to subjects, the costs or the benefits of kindness? To answer this question let us compare rejection rates and offer frequencies in treatment 2 with those in the control game. Taking the third treatment as a reference, these games capture the effects of a reduction in the costs of kindness by 10 units (treatment 2) and a reduction in the benefits of kindness by 10 units (control game). If costs are more important than benefits we should find that rejection rates in treatment 2 are lower than in the control game and, analogously, that offer frequencies in the control game are lower than in treatment 2. However, as can be seen in figures 3a and 3b, we find only very minor differences between behaviors in these games. Rejection rates in treatment 2 are slightly higher than in the control game (z=-.502, p=.6160, Mann-Whitney). This implies that, if at all, responders care less about their own benefits as compared to the proposers' costs of kindness. Offer frequencies are almost equally high in both games. We observe a difference of less than 1 percentage point between frequencies in treatment 2 and the control game (z=.023, p=.9815, Mann-Whitney). Overall, these findings suggest that the costs and benefits of kindness being valued largely equal among responders and proposers.

6. Logit Analyses

The following multivariate estimations allow us to more robustly quantify the effects of costs and benefits of kindness on responder and proposer behavior. Tables 3 and 4 report the results of logit estimations on the likelihood to reject the 80:20 offer at node n_2 (table 3) and on the probability to offer the 80:20 split at node n_1 (table 4). The leftmost column in each table lists the explanatory variables: the costs of kindness (ranging from 10-50), the benefits of kindness (either 10 or 30), a dummy for male subjects, and cross-terms for male subjects

and the costs and benefits of kindness. The columns to the right provide coefficients, z-statistics, and p-values for a given set of variables. Model statistics are reported at the very bottom of each table.

Table 3: logit analysis of responder behavior

	dependent variable: probability to reject 80:20 at node n_2											
	model 1			model 2			model 3			model 4		
independent variable(s)	Coef.	z	P>|z|	Coef.	z	P>|z|	Coef.	z	P>|z|	Coef.	z	P>|z|
costs of kindness	-.0380	-3.23	.001	-.0380	-3.23	.001	-.0384	-2.78	.005	-.0297	-2.09	.037
benefits of kindness	.0337	1.55	.122	.0337	1.55	.121	.0337	1.55	.121	.0028	.11	.915
male				.0407	-.12	.907	.0164	.03	.979	-1.897	-1.63	.103
male x costs of kindness							.0010	.05	.963	-.0271	-1.04	.298
male x benefits of kindness										.1037	2.06	.040
constant	-.3616	-.73	.463	-.3752	-.74	.459	-.3673	-.69	.492	.1949	.33	.741
N	172			172			172			172		
Pseudo R^2	.0491			.0491			.0491			.0690		

Model 1, table 3, estimates the impact of costs and benefits of kindness on rejection rates. Model 2 extends the list of explanatory variables as to include the dummy for male responders. Models 3 and 4 also include cross-terms for male subjects and the costs and benefits of kindness.

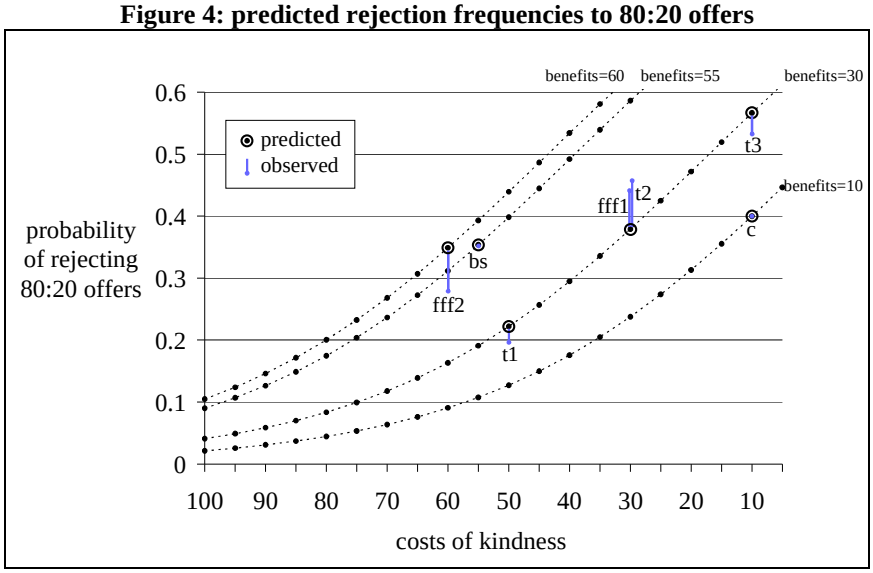
Across all models, we find that the costs of kindness have a negative impact on the rejection probability, confirming hypothesis H1. Each Taler the proposer would forfeit in the unchosen alternative significantly lowers the rejection probability. This result confirms our previous observation. The value of -0.0380, for example, is the effect of the costs of kindness on the ratio between two odds. Respondents who are confronted with an increase in the costs of kindness by 20 obtain an odds ratio that amounts to exp(-0.0380*20)=0.47. Thus, they are about half as likely to reject the unkind proposal if the costs increase by 20.

The benefits of kindness exert a positive influence on rejection behavior. For each Taler of benefits the responder would earn in the unchosen alternative, the probability to reject the actual 80:20 offer increases with a coefficient of 0.0337 in model 1. An increase of the benefits of kindness by 20 thus increases the odds ratio by exp(0.0337*20)=1.96. They are thus about double as likely to reject. However, this effect seems to be of weak nature (p<.13), which may result from the fact that only few observations were available for this comparison. As indicated by the positive sign of the male dummy in model 2, men are generally predicted to reject insignificantly more often (p=.907). The models 3 and 4 offer a more detailed analysis of gender effects. As suggested by the three treatments in figure 2a, male responders may

respond more strongly to changes in the costs of kindness. We test for this interaction by model 3. However, we do not find evidence that a subject's gender negatively interacts with the costs. To the contrary, the model coefficient indicates that rejection rates of male responders rather increase in the costs of kindness. This can be related to gender differences in the control game. In this game, we observe 48 percent of the female subjects to reject the 80:20 offer compared to 23 percent of the male responders. Thus, we observe in the control treatment many rejections by women when costs of kindness are low. In order to isolate the impact of costs on male responders we must hence also control for the interaction between a subject's gender and the benefits of kindness. In the fourth model we include two cross-terms regarding gender-specific responder behavior. Confirming our previous results, we find the costs of kindness to significantly decrease the probability to reject for both gender ($p=.037$). We now observe weak evidence that male responders are less likely to reject ($p=.103$) and, as indicated by figure 2a, that male subjects react more strongly to changes in the costs of kindness ($p=.298$). However, the most severe difference in gender behavior can be observed with respect to the benefits of kindness. We find only male subjects to significantly respond to their foregone gains ($p=.040$). Female responders do not seem to alter their behavior with respect to the benefits of kindness (the error probability for benefits to matter once controlling for male participants amounts to $p=.915$). This finding gives strong support to previous evidence on gender-specific preferences for reciprocity (e.g. Cox 2002, Lambsdorff and Frank 2011, Schubert 2011). The overall impact of the benefits of kindness seems to be mainly driven by male responders in our subject pool. While male subjects seem to strongly care about foregone costs and benefits, women are found to be less responsive to changes in the benefits but only to the costs of kindness.

Figure 4 provides a graphical summary of our predictions of responder behavior on the aggregate level. It illustrates the predicted impact of various combinations of costs and benefits of kindness on rejection rates for the average responder based on the first logit model.

Figure 4: predicted rejection frequencies to 80:20 offers



More specifically, figure 4 presents estimated rejection frequencies for a broad range of costs (5-100) and four values of benefits (10, 30, 55 and 60). The estimates fit our data quite well. First, figure 4 highlights the predicted rejection rates for our treatments (t1, t2, t3) and for the control game (c). The estimates fit our data quite well. Besides the positive impact of costs on the probability to reject, we would also expect a cost reduction of 20 units to have a slightly higher impact than a reduction in the benefits of 20 units (comparing t2 with t3 and c with t3). Second, our regressions also provide reasonable estimates for experiments carried out by Brandts and Solà (2001), denoted as bs, and Falk et. al (2003), denoted as fff1 and fff2. Brandts and Solà (2001: 147), for example, find responders to reject 80:20 offers with unchosen alternatives of 25:75 (costs=benefits=55) 35 percent of the time, our prediction, bs, being 35.4 percent.[4] When the alternative offer is the 50:50 split (costs=benefits=30), Falk et al. (2003: 23) observe that 44 percent reject the 80:20 offer. The corresponding estimates of our model, fff1, are 37.9 percent. Less than 27 percent reject the 80:20 offer given an unchosen alternative of 20:80 (costs=benefits=60), our prediction, fff2, being 34.9 percent.

Altogether, the results of the logit regressions on responder behavior broadly confirm the conjecture that we consider more than just our foregone benefits when evaluating the kindness of an action. Subjects take into account the situational constraints the actor was facing – whether he had to pay a high price for being kind to us or whether kindness was cheaply available to him.

Let us finally discuss the results of four logit regressions on proposer behavior (table 4). In model 1 we estimate the impact of costs and benefits of kindness on the probability to select the offer 80:20. Model 2 expands model 1 by the gender dummy, while models 3 and 4 also

[4] Brandts and Solà also observe that rejection rates decrease to 20 percent when the alternative is a 12.5:87.5 (costs=benefits=67.5). Our prediction amounts to 34.1 percent. This suggests that with benefits and costs of kindness being large our forecasts are less reliable.

include cross-terms for interaction between male responders and costs and benefits of kindness.

Table 4: logit analysis of proposer behavior

	dependent variable: probability to offer 80:20 at node n_1											
	model 1			model 2			model 3			model 4		
independent variable(s)	Coef.	z	P>|z|	Coef.	z	P>|z|	Coef.	z	P>|z|	Coef.	z	P>|z|
costs of kindness	.0487	3.65	.000	.0501	3.70	.000	.0522	3.14	.002	.0584	2.94	.003
benefits of kindness	-.0491	-1.83	.067	-.0514	-1.89	.058	-.0517	-1.90	.058	-.0692	-1.77	.076
male				.8393	-2.34	.020	.9748	1.37	.171	.4225	.38	.704
male x costs of kindness							-.0046	-.22	.825	-.0160	-.58	.561
male x benefits of kindness										.0353	.64	.520
constant	-.9660	-1.78	.075	-1.285	-2.25	.025	-1.342	-2.13	.033	-1.096	-1.53	.126
N	172			172			172			172		
Pseudo R^2	.0736			.0997			.0999			.1019		

Overall results suggest that proposer behavior is also influenced by the costs and benefits associated with the unchosen alternative. In all four models the costs of kindness significantly increase the likelihood to propose an 80:20 split ($p<.01$). As expected, the benefits of kindness decrease the probability to offer the 80:20 split in all models. This effect is generally significant at the 10 percent error level. Model 2 shows that the proposer's gender significantly impacts his decision to offer the 80:20 split. Male proposers appear to be more likely to propose the asymmetric 80:20 split. If behavior is less motivated by strategic concerns (see e.g. Eckel and Grossman 2008), this provides further evidence to the conjecture that female responders abstain from proposing 80:20 because they are more averse to inequality. The models 3 and 4 do not provide additional insights on proposer behavior. As a consequence, we find that male and female proposers seem to care equally about the costs and the benefits of kindness. Thus, females do also worry about the foregone benefits of their counterparts. However, the impact of benefits seems to be role-specific. If female subjects act as responders they seem to care less about their own foregone gains.

Overall, the results reported in table 4 nicely match our previous findings on responder behavior. We find significant support for our hypothesis H2. Offer rates increase in the costs of kindness. We also find some evidence that offer rates decrease in the benefits of kindness.

Consideration of the costs of kindness among proposers would have been expected already by Rabin (1993). In his view, proposers value the material loss from acting kindly against the preference for reciprocity with the latter being driven only by the benefits awarded to the responder. This argument appears compelling and should have motivated costs to exert a

stronger influence than benefits on the proposer's behavior. We were surprised that both influences were largely identical in magnitude. Our model on the costs and benefits of kindness thus seem to capture responder's and proposer's equally well.

7. Conclusion

Reciprocity theory argues that the perception of kindness determines our behavioral response to an action. However, we still know little about how to evaluate the kindness in the laboratory. While Rabin (1993) puts emphasis on intrapersonal comparisons, more recent models like Falk and Fischbacher (2006) stress that interpersonal comparisons are also important determinants of kindness. Our study sheds more light on how we evaluate unchosen alternatives. We propose a parsimonious approach to judging another person's behavior based on costs and benefits of kindness. We ran a series of mini ultimatum games to test our hypotheses. Our results indicate that both costs and benefits associated with unchosen alternatives determine our perception of kindness. We confirm previous findings that the benefits of (forgone) kindness significantly increase the willingness to exert negative reciprocity. But we show that also the costs of kindness are relevant for subjects' calculus, the magnitude of this effect being similar to the one of benefits.

This way of judging provides us with a series of clear-cut predictions for a large variety of bargaining situations. We may now also offer a likely explanation for our angriness toward the car driver in our introductory example. When he passed by the lake we assumed that his alternative option, to help us, was cheaply available and his kindness would have been extremely helpful. In such scenarios, we expect car drivers to recognize that our benefits outweigh their costs. What really adds to our anger is that the car driver's disutility from stopping the car appeared negligible compared to our benefits from surviving the hazard.

On the other hand, our data also suggest that the vast majority of subjects would immediately turn over, extricating us from our peril. Proposers disengage in unkind offers the higher the benefits of kindness. Not surprisingly, proposers take the costs of their kindness also into consideration, abstaining from costly kindness either because they dislike the material loss or because they believe that the responder should not expect such costly kindness. We observed that responders respect this decision, abstaining from negative reciprocity when kindness would have been too costly to the proposer. This suggests that proposers and responders coordinate on a mutual perception of kindness in ultimatum bargaining.

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